REMARKS

This Amendment is filed in response to the Office Action dated May 1, 2008.

Rejection Under 35 U.S.C. § 112:

Claims 1-7 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In particular, Claim 1 was rejected for claiming both an apparatus and a method step. Claim 1 is now amended to recite "wherein the liquid is histological examination liquid" rather than "wherein the liquid is utilized in histological examination liquid." No new matter is added and any methodology terminology has now been eliminated. This terminology merely provides additional description of the specific type of liquid present in the patent claim. Claims 2-7 were rejected accordingly due to the fact that these Claims depend from Claim 1 and contain all of the limitations of Claim 1, as amended.

It is respectfully believed that Claims 1-7 overcome the rejection under 35 U.S.C. § 112, second paragraph.

Rejection Under 35 U.S.C. § 102(b):

Claim 1 was rejected under 35 U.S.C. § 102(b) as being anticipated by Hartl et al. (U.S. Patent No. 4,225,557) in view of Roe et al. (U.S. Patent No. 6,060,039). Hartl et al. recites: "A packaged diagnostic test strip for determining occult blood in a stool sample, said test strip comprising a first or front sheet having at least one aperture therein, said aperture having at least one included angle equal to or less than 90 degrees; a diagnostic test strip under said front sheet and extending under said aperture, said test strip containing a reagent, developable by the separate application of peroxide solution thereto, for the detection of occult blood in a stool sample to be

applied to said diagnostic test strip through said aperture; a back sheet supporting said test strip in layered arrangement with said test strip and with said front sheet, **said back sheet having at least one flap-covered aperture therein in that region thereof corresponding to the location of said aperture in said front sheet, whereby when the flap is opened said test strip is exposed thereunder for application of peroxide solution thereto to develop the reagent present in said test strip; and a closure flap at least partially extending over said front sheet and having closure means thereon for covering said aperture in said front sheet when in closed position**" (emphasis added) (Claim 1, Column 4, Lines 36-56). Therefore, in order to receive the peroxide solution, the closure flap needs to be open. If the foldable sheet is permeable, the closure flap would not provide any function. Therefore, a person of ordinary skill in the art would assume that the closure flap is liquid impermeable by a reading of Hartl et al. In fact, Hartl et al. makes this point very clear: "This part of the test can be performed by the patient himself. After closure, i.e. by insertion of the tab on the cover flap into the slit, the test slide goes to the doctor. **The latter opens the flaps on the back sheet and then applies the developer e.g. (peroxide solution) to the portions of the intermediate sheet, impregnated with the test reagent, which are so exposed and observes the results**. When guaicum resin is employed as an indicator in a test for occult blood in the stool, a blue to blue-green coloration indicates a positive result" (emphasis added) (Column 1, Lines 58-68). Therefore, the diagnostic test strip could be contaminated if the closure flap was permeable and it was irrelevant as to whether or not the closure flap was open. Therefore, not only does Hartl et al. teach away from the Applicant's Invention, as claimed, but would also destroy the Applicant's Invention, as claimed, for its stated purpose of providing a foldable liquid permeable sheet having extended flap portions which flap portions are foldable to overlap the liquid permeable target, where the liquid is histological examination liquid. Under 35 U.S.C. §102, "the identical invention must be shown in as complete detail as is

contained in the...claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 U.S.P.Q.2d 1913, 1920 (Fed. Cir. 1989). "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987). Moreover, when evaluating a claim for anticipation, all claim limitations must be considered. *In re Evanega*, 829 F.2d 1110, 4 U.S.P.Q.2d 1249 (Fed. Cir. 1987).

Roe et al. is cited solely for proposition that someone with ordinary skill in the art would automatically assume that any reference to "cardboard" would indicate that this is a liquid permeable material. Roe et al. is an assay for determining insecticide resistance and has no bearing on the Applicant's claimed invention of a histological specimen retaining device for processing tissue. There are numerous variations of cardboard that are liquid impermeable, e.g., coffee cups, juice boxes, soup containers, milk cartons, and so forth. For example, U.S. Patent No. 4,204,820, issued to Toncelli on May 27, 1980 (See attached Appendix A), recites: "According to a further characteristic of the invention, instead of the moulds containing the mix, **two sheets of sufficiently strong and impermeable cardboard** are arranged, between which the measured-out quantities of mix are positioned and transported under the press, preventing the mix from adhering to the conveyor belt and to the head of the press itself" (emphasis added) (Column 1, Lines 35-41). It is just as likely that someone with ordinary skill in the art would reference Toncelli rather than Roe et al. when seeing the word "cardboard" in order to make a determination as to whether or not "cardboard" can be categorized as either liquid permeable or liquid impermeable. It is respectfully believed that "cardboard" is not inherently permeable.

Moreover, Hartl et al. teaches away from "cardboard" that is liquid permeable since Hartl et al. requires: "This part of the test can be performed by the patient himself. After closure, i.e. by insertion of the tab on the cover flap into the slit, the test

slide goes to the doctor. **The latter opens the flaps on the back sheet** and then applies the developer e.g. (peroxide solution) to the portions of the intermediate sheet, impregnated with the test reagent, which are so exposed and observes the results" (emphasis added) (Column 1, Lines 58-65). Therefore, since the foldable sheet must be open to receive the peroxide solution, this clearly indicates that the cardboard foldable sheet in Hartl et al. is liquid impermeable. Attached is a Material Data Safety Sheet that clearly identifies peroxide solution as a liquid solution http://www.jtbaker.com/ msds/ englishhtml/h4070.htm. (See attached Appendix B). There would be no need to open the flap in Hartl et al. if the cardboard was already liquid permeable so that the peroxide solution could already pass directly into the target.

Also, Hartl et al. discloses: "...a diagnostic test strip under said front sheet and extending under said aperture or apertures, **said test strip carrying a diagnostic reagent**; a second or back sheet supporting said test strip in layered arrangement therewith and with said front sheet, said back sheet having at least one flap-covered aperture therein in that region thereof corresponding with the location of said aperture or apertures in said front sheet, whereby when the flap is open said test strip is exposed thereunder; and a closure flap at least partially extending over said front sheet and having closure means thereon for covering said aperture or apertures in said front sheet when in closed position" (emphasis added) (Abstract, Lines 4-16). If the flap was liquid permeable, the test strip "**carrying a diagnostic reagent**" could be ruined by liquid passing through the flap into the test strip. The reason for the flap in Hartl et al. is so that the test strip is only exposed to fecal matter when acquiring a stool specimen and then open to receive peroxide solution during testing to develop the reagent. Liquid passing onto the testing strip would literally destroy the testing strip for its desired purpose by diluting and removing both the stool specimen and the reagent. A reagent is defined as "a substance that, because of the reactions it causes, is used in analysis and synthesis." See http://dictionary.reference.com/browse/reagent, which is attached

in Appendix C.

Moreover, proper application of a reference against a device described and claimed in a patent application requires broadly that the anticipatory device be substantially the same as the anticipated device in function, structure and result. In this case, the function of opening a flap to obtain stool sample on a test strip, opening the flap again to apply a peroxide solution to the test strip having a diagnostic reagent is very different than a foldable liquid permeable sheet having edges with a liquid permeable target disposed on the foldable liquid permeable sheet within the edges of said sheet, thereby providing extended flap portions which flap portions are foldable to overlap the liquid permeable target, where the liquid is a histological examination liquid. Accordingly, the structure is very different. Finally, the results are markedly different with Hartl et al. for collecting stool samples and applying a peroxide solution to a test strip having a regent with a protective cover that is only open for obtaining a sample and testing versus the Applicant's Invention that is for processing tissue for histological examination. **The requirement established by the Manual for Patent Examining Procedure (M.P.E.P. §2131.01) is that when there are multiple references used in a 35 U.S.C. § 102 rejection, the second reference must either:**

1. show that the primary reference contains an "enabled disclosure" (which is not applicable);
2. explain the meaning of a term used in the primary reference (which is also not applicable); or
3. show that a characteristic not disclosed in the reference is inherent (**which is stated by the Examiner as being the reason**).

Such evidence must make clear that the missing descriptive matter is **necessarily present in the thing described in the reference**, and that it would be so recognized by persons of ordinary skill." (emphasis added) *Continental Can Co. USA v. Monsanto Co.*, 948 F.2d 1264, 1268, 20 U.S.P.Q.2d 1746, 1749 (Fed. Cir. 1991).

In this situation, Toncelli, U.S. Patent No. 4,204,820, along with every known cardboard liquid container, clearly refutes the premise that an inherent feature of cardboard is that it is liquid permeable. Accordingly, the use of this second reference, i.e., Roe et al., is inappropriate and improper as determined by the United States Court of Appeals for the Federal Circuit and the United States Patent Office's own rules and regulations. Moreover, cardboard is not inherently liquid permeable and many cardboards are liquid impermeable. The common disposable coffee cup is merely one example. It is respectfully believed for something to be inherent from a disclosure; it must, by necessity, flow from that disclosure. Due to the numerous examples of liquid impermeable cardboard present in the world, it is very clear that liquid permeability is not an aspect that flows from the word "cardboard." Moreover, the cardboard flaps disclosed in Hartl et al. would be rendered superfluous if these flaps were liquid permeable. The flaps in Hartl et al. protect the test strips from being contaminated so that only the specimen and peroxide solution can be selectively applied and there is protection from liquid contamination. Therefore, the inherent aspect of the cardboard in Hartl et al. would be that someone with ordinary skill in the art would clearly understand that the cardboard in this Reference is liquid impermeable rather than liquid permeable. This is the inherent aspect of Hartl et al. that would flow from this Reference, so there is absolutely no reason to combine Hartl et al. with Roe et al.

In addition, Hartl et al. does not disclose a malleable securing strip but rather a slit. For example, Applicant's Published Patent Application, i.e., U.S. Published Patent Application No. 20050112032, recites: "Again referring to FIG. 1, histological retaining device comprises a malleable securing strip 18. When extended flap portions 16a-d are folded to overlap target 14 (described in more detail below), **malleable securing strip 18 is designed to hold, crimp, or clamp the folded extended flap portions 16a-d to target 14; thereby, securing the extended flap portions 16a-d in the folded condition**. Additionally, malleable securing strip 18 provides positive release upon the

opening of folded flap portions 16a-d after processing of the sample." (emphasis added) (Paragraph [0026], Lines 1-10). Also: "Malleable securing strip 18 can be **any material that is formable or malleable**, but it is **preferred that strip 18 is either a metal wire or a strip of heavy metal foil**. The **wire or foil needs to have appropriate dimensions to allow for a one time use-easy closure and clamping, as well as, positive release** of **extended flap portions 16a-d** (described in more detail below)." (emphasis added) (Paragraph [0028], Lines 1-7). In marked contrast, the item marked by numeral 18 in Hartl et al. is identified by the Examiner as corresponding to the malleable securing strip. Hartl et al. recites: "Front sheet 11 can be covered with cover sheet 16 provided with tab 17 which is engageable with **slits 18 and 18'** in front sheet 11 and rear sheet 14 respectively" (Column 3, Lines 40-42). It is respectfully believed that a slit, which is an opening or void, is a very different item than a malleable securing strip. "The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 U.S.P.Q.2d 1913, 1920 (Fed. Cir. 1989). It is respectfully believed that a slit is not identical to a malleable securing strip. An opening or void cannot function in the same manner as a solid object, i.e., malleable securing strip.

Therefore, it is respectfully believed that Claim 1 overcomes the rejection under 35 U.S.C. § 102(b) and is patentable over Hartl et al. in view of Roe et al. and is in condition for allowance.

Claims 2, 5-6 depend from independent Claim 1, which are respectfully believed to overcome the 35 U.S.C. § 102(b) rejection over Hartl et al. in view of Roe et al. in the same manner as Claim 1 as described above. If an independent claim is not anticipated, then any claim depending therefrom is also not anticipated. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988). Claim 2 recites that the "...malleable securing strip is attached at an **edge** of the liquid permeable sheet." The slits 18 and 18' are not located at the edge of sheet but on the top of the sheet as

shown in FIGS. 1-3 of Hartl et al. Moreover, when evaluating a claim for anticipation, all claim limitations must be considered. *In re Evanega*, 829 F.2d 1110, 4 U.S.P.Q.2d 1249 (Fed. Cir. 1987). Claim 5 recites that: "...the liquid permeable target is coated with a release agent." Applicant's Published Patent Application, i.e., U.S. Published Patent Application No. 20050112032, recites: "Additionally, the chipboard card stock is preferably coated with a **release agent to assist in forming the separation of the card from its wax impregnated specimen**--to be investment cast into the wax block. The release agent may be a parting layer of gluten, gelatin, casein, alginate, or similar organic coating" (emphasis added) (Paragraph [0023], Lines 5-10). In marked contrast, the test strip of Hartl et al. is a **regent** such as "...guaicum resin, o-tolidine, and 3,3',5,5'-tetramethyl benzidine" (Column 4, Claim 3, Lines 62-64), which reacts with a peroxide solution. A release agent and a reagent are two very different chemicals that perform very different functions with very different results. "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987).

Therefore, it is respectfully believed that Claims 1, 2, 5 and 6 overcome the rejection under 35 U.S.C. § 102(b) and are patentable over Hartl et al. in view of Roe et al. and are in condition for allowance.

Rejection Under 35 U.S.C. § 103(a):

Claims 3 and 4 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Hartl et al. (U.S. Patent No. 4,225,557) in light of Roe et al. (U.S. Patent No. 6,060,039), as stated above and further in view of Rochette (U.S. Patent No. 3,537,636). Claims 3 and 4 depend from independent Claim 1 and are respectfully believed to overcome the rejection over Hartl et al. in light of Roe et al. in the same manner as Claim 1 as described above. If an independent claim is not obvious, then

any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988). Moreover, as stated previously, Hartl et al. clearly appears to be a liquid impermeable flap that is necessary to protect the test strip from contamination. There is no motivation to combine Hartl et al. with Roe et al. but rather there is clear motivation not to combine Hartl et al. with Roe et al. Liquid permeability, as evidenced by Toncelli, does not necessarily flow from the term "cardboard." Moreover, Rochette also discloses liquid **impermeable** material. Rochette refers to: "...a sheet of cellulose film." (Column 1, Lines 64-65). It is believed that this material is also known as cellophane (see http://en.wikipedia.org/wiki/Cellophane, which is attached as Appendix D). This material is **liquid impermeable.** Therefore, there is no teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention. *KSR International Co. v. Teleflex Inc.*, 82 U.S.P.Q.2d 1385 (U.S. 2007). In determining obviousness, the proper analysis is whether the claimed invention would have been obvious to one of ordinary skill in the art after consideration of all the facts. "To reject a claim based on this rationale, U.S. Patent Office personnel must resolve the Graham factual inquiries. Office personnel must then articulate the following: (1) a finding that the prior art included each element claimed, although not necessarily in a single prior art reference, with the only difference between the claimed invention and the prior art being the lack of actual combination of the elements in a single prior art reference; (2) a finding that one of ordinary skill in the art could have combined the elements as claimed by known methods, and that in combination, each element merely would have performed the same function as it did separately." (Federal Register / Volume 72, No. 195 / Wednesday, October 10, 2007 / Notices, Page 57529, "Examination Guidelines for Determining Obviousness Under 35 U.S.C. § 103 in View of the Supreme Court Decision in KSR International Co. v. Teleflex Inc."). In this case, both Hartl et al. and

Rochette function in a totally different manner with fluid impermeability and there is no motivation to combine Roe et al. with Hartl et al. since the function and purpose of Hartl et al. would be destroyed. Therefore, it is respectfully believed that a proper rejection under 35 U.S.C. § 103(a), based on the United States Patent Office's own guidelines, cannot be made. Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is **some teaching, suggestion, or motivation to do so**. *In re Kahn*, 441 F.3d 977, 986, 78 U.S.P.Q.2d 1329, 1335 (Fed. Cir. 2006).

Therefore, it is respectfully believed that Claims 3 and 4 overcome the rejection under 35 U.S.C. § 103(a) over Hartl et al. in light of Roe et al., as stated above, and further in view of Rochette and are in condition for allowance.

Claim 7 was rejected under 35 U.S.C. § 103 (a) as being unpatentable over Hartl et al. (U.S. Patent No. 4,225,557) in view of Roe et al. (U.S. Patent No. 6,060,039). Claim 7 depends from independent Claim 1 and is respectfully believed to overcome the rejection over Hartl et al. in light of Roe et al. in the same manner as Claim 1 as described above. If an independent claim is not obvious, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988). Hartl et al. recites: "...**said back sheet having at least one flap-covered aperture therein in that region thereof corresponding to the location of said aperture in said front sheet, whereby when the flap is opened said test strip is exposed thereunder for application of peroxide solution thereto to develop the reagent present in said test strip; and a closure flap at least partially extending over said front sheet and having closure means thereon for covering said aperture in said front sheet when in closed position**" (emphasis added) (Claim 1, Column 4, Lines 46-56). Therefore, in order to receive the peroxide solution, the closure flap needs to be open. If the foldable sheet is permeable, the closure flap would not provide any function. Therefore, a person of ordinary skill in the art would assume that the closure

flap is liquid impermeable by a reading of Hartl et al. In fact, Hartl et al. makes this point very clear: "This part of the test can be performed by the patient himself. After closure, i.e. by insertion of the tab on the cover flap into the slit, the test slide goes to the doctor. **The latter opens the flaps on the back sheet and then applies the developer e.g. (peroxide solution) to the portions of the intermediate sheet, impregnated with the test reagent, which are so exposed and observes the results.** When guaicum resin is employed as an indicator in a test for occult blood in the stool, a blue to blue-green coloration indicates a positive result" (emphasis added) (Column 1, Lines 58-68). Therefore, the diagnostic test strip could be contaminated if the closure flap was permeable, and would be irrelevant as to whether or not the closure flap was open. Therefore, not only does Hartl et al. teach away from the Applicant's Invention, as claimed, but it would also destroy the Applicant's Invention, as claimed, for its stated purpose of providing a foldable liquid permeable sheet having extended flap portions, where the flap portions are foldable to overlap the liquid permeable target, where the liquid is histological examination liquid. If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims prima facie obvious. *In re Ratti*, 270 F.2d 810, 123 U.S.P.Q. 349 (C.C.P.A. 1959). In addition, if proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 U.S.P.Q 1125 (Fed. Cir. 1984).

Moreover, it is acknowledged that the use of x and y coordinate lines are completely absent from both Hartl et al. and Roe et al. In determining obviousness, the proper analysis is whether the claimed invention would have been obvious to one of ordinary skill in the art after consideration of all the facts. "To reject a claim based on this rationale, U.S. Patent Office personnel must resolve the Graham factual inquiries.

Office personnel must then articulate the following: (1) **a finding that the prior art included each element claimed**, although not necessarily in a single prior art reference, **with the only difference between the claimed invention and the prior art being the lack of actual combination of the elements in a single prior art reference**; (2) a finding that one of ordinary skill in the art could have combined the elements as claimed by known methods, and that in combination, each element merely would have performed the same function as it did separately." (emphasis added) (Federal Register / Volume 72, No. 195 / Wednesday, October 10, 2007 / Notices, Page 57529, "Examination Guidelines for Determining Obviousness Under 35 U.S.C. § 103 in View of the Supreme Court Decision in KSR International Co. v. Teleflex Inc.") (emphasis added). It is respectfully believed that it is very clear that this rejection completely fails the new KSR Guidelines promulgated by the United States Patent Office since the x and y coordinate markings are wholly absent from both Hartl et al. and Roe et al. It is respectfully believed that a feature that is absent from both cited References cannot come into being by their combination.

Moreover, a statement that modifications of the prior art to meet the claimed invention would have been "well within the ordinary skill of the art at the time the claimed invention was made" because the references relied upon teach that all aspects of the claimed invention were individually known in the art is **not sufficient** to establish a prima facie case of obviousness without some objective reason to combine the teachings of the references. *Ex parte Levengood*, 28 U.S.P.Q.2d 1300 (Bd. Pat. App. & Inter. 1993). **"[R]ejections on obviousness cannot be sustained by mere conclusory statements**; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." (emphasis added) *In re Kahn*, 441 F.3d 977, 988, 78 U.S.P.Q.2d 1329, 1336 (Fed. Cir. 2006). Manual for Examining Procedure (M.P.E.P. §2143.01 IV).

Therefore, it is respectfully believed that Claim 7 overcomes the rejection under 35 U.S.C. § 103 (a) and is patentable over Hartl et al. in view of Roe et al. and is in condition for allowance.

Therefore, it is now believed that all of the pending Claims, i.e., Claims 1-7, in the present application are in condition for allowance. Favorable action and allowance of the Claims is therefore respectfully requested. If any issue regarding allowability of any of the pending Claims in the present application could be readily resolved, or if other action could be taken to further advance this application such as an Examiner's Amendment, or if the Examiner should have any questions regarding the present Amendment, it is respectfully requested that the Examiner please telephone the Applicant's undersigned attorney in this regard.

Respectfully submitted,

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Dated: July 29, 2008

Appendix A

United States Patent [19]

Toncelli

[11] **4,204,820**

[45] **May 27, 1980**

[54] **SLAB FORMING CONVEYING LINE**

[76] Inventor: **Marcello Toncelli, Via Giovanni XXIII, 2 - Bassano del Grappa (Vicenza), Italy**

[21] Appl. No.: **873,144**

[22] Filed: **Jan. 30, 1978**

[30] **Foreign Application Priority Data**

Apr. 22, 1977 [IT] Italy 85564 A/77

[51] Int. Cl.[2] **B28B 3/02**

[52] U.S. Cl. **425/89**; 425/420; 425/421

[58] Field of Search 264/71, 102; 425/89, 425/420, 421

[56] **References Cited**

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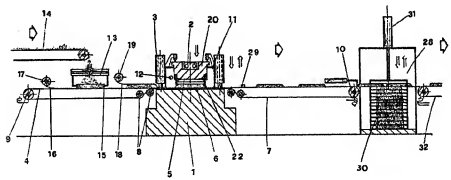
3,103,698	9/1963	Wollett	425/420
3,372,217	3/1968	Paerels et al.	425/89
3,712,785	1/1973	Hirt et al.	425/421

Primary Examiner—John McQuade
Attorney, Agent, or Firm—Bucknam and Archer

[57] **ABSTRACT**

A method for the formation of resin-bonded grit slabs is described, in which a mixture containing inert minerals, and liquid resin in the minimum quantity necessary to bind the inert materials together, in order to avoid any excess of binder and thus to reduce the coefficient of thermal expansion of the finished product to levels compatible with its use, is subjected to combined pressure and vibration, in an airless environment, to obtain porosity-free slabs. The apparatus comprises a conveyor belt for automatically transferring the material, consisting of grit and resin mix in the quantity provided by a dispenser and held between two continuous sheets of cardboard under a vacuum vibratory press in which a slab is formed, and means for transporting the formed material into a drying oven in which the process is completed, with rapid polymerization of the resins, to produce grey slabs.

6 Claims, 4 Drawing Figures



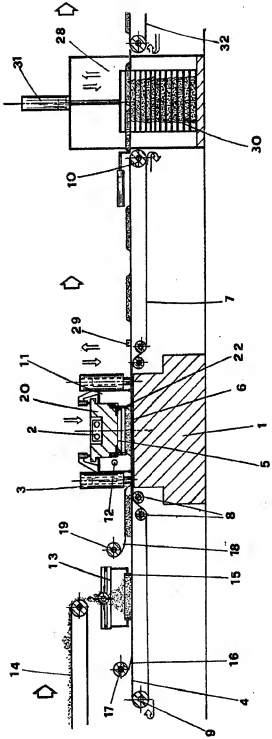


FIG.1

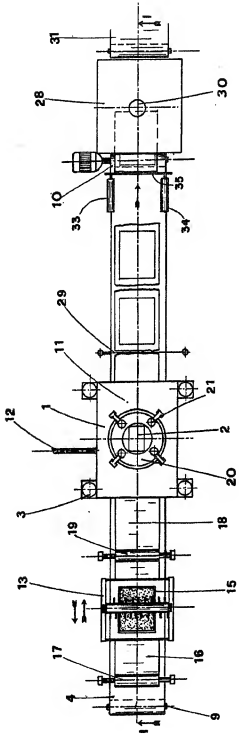


FIG.2

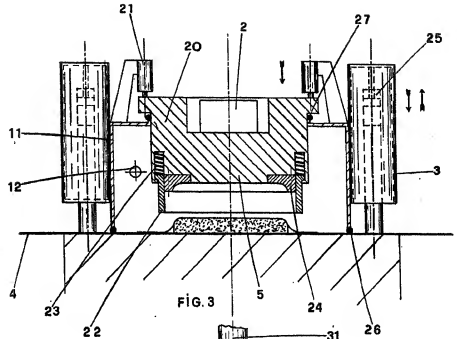


FIG. 3

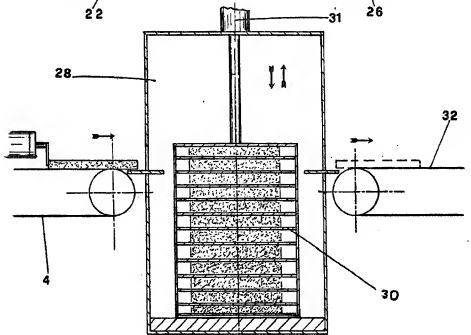


FIG. 4

SLAB FORMING CONVEYING LINE

According to the invention, resin-bonded grit slabs are produced wherein the resins are incorporated in the quantity strictly necessary to bond the inert materials, also obtaining products free from porosity, homogeneous and endowed with dimensional stability.

Up to now, grit slabs bonded with resin in the liquid state have been produced by casting and vibration and/or pressing of fluid mixes whose fluidity is obtained by means of a high resin/inert materials ratio.

According to the invention, the resin/inert materials ratio is distinctly lower than that used up to now, so that the liquid resin is distributed in the mixture to form a coating which surrounds each particle of inert material, only in sufficient quantity to cause the granules of inert material to cohere when the slabs have been formed.

The combined vibration and pressure action in an airless environment makes it possible to obtain a finished product consisting of porosity-free slabs.

The use of dyes or differently coloured inert materials or mixtures and combinations thereof, makes it possible to obtain evenly or intermittently coloured or unevenly patterned slabs.

The scope of the present invention provides for the embodiment of apparatus suitable to carry out a continuous work cycle for producing the above-mentioned slabs, in order to automate the entire process of measuring out the product into the individual moulds, obtaining uniform distribution of the same and effecting pressing with vibration under vacuum, and the subsequent drying of the slabs in a drying oven, in which polymerisation of the resin is quickly completed.

According to a further characteristic of the invention, instead of the moulds containing the mix, two sheets of sufficiently strong and impermeable cardboard are arranged, between which the measured-out quantities of mix are positioned and transported under the press, preventing the mix from adhering to the conveyor belt and to the head of the press itself.

The above-mentioned apparatus is illustrated in the accompanying drawing, wherein:

FIG. 1 shows a diagrammatic elevation view, in section along the line I—I in FIG. 2 of the apparatus, a description of which will give a better idea of the characteristics of the method according to the invention.

FIG. 2 shows an overall view from above of the same.

FIG. 3 shows a detail of the press, on an enlarged scale.

FIG. 4 is a diagrammatic view of a detail of the drying oven.

FIGS. 1 and 2 show press 1, which compresses the mass of grit and resin mix intended to form a slab, under vacuum and with vibration.

In this press, vibrator 2 is positioned at the top, suitably supported by side columns 3, while a conveyor belt 4, on which the mix of material for pressing moves forward, passes in the space between the bottom plate 5 of the press and the surface of the bedplate 6 thereof.

The return section 7 of the conveyor belt also passes through this interspace, thus forming a continuous endless belt kept taut by return rollers 8 and end rollers 9 and 10, at least one of which is motor-driven.

The bell-jar 11 provides the necessary container between the top of the press 1 and the conveyor belt 4 for the vacuum produced in it by suction through tube 12.

At the beginning of conveyor belt 4 there is the distributor device 13 by means of which the mix coming from conveyor belt 14 is evenly distributed within a boundary delimited by the frame 15 of the distributor itself, on the cardboard belt 16 coming from spool 17, previously stretched on the conveyor belt 4.

A second cardboard belt 18 coming from spool 19 is superimposed on the mix deposited on cardboard belt 16, to be transported by conveyor belt 4 under press 1.

The latter includes the head 20, on which vibrator 2 is fixed, which head is driven downwards by hydraulic cylinders 21 (FIG. 3) to compress the mix between the two sheets of cardboard 16 and 18, and is equipped on the perimeter with a containing device, consisting of mobile frame 22, equipped with thrust springs 23, while the fixed frame 24 of head 5 delimits the exact shape of the slab to be formed.

The compressive action is also facilitated by the vacuum formed inside bell-jar 11, which is lowered by hydraulic cylinders 25, positioned between the side columns 3.

Packings 26 and 27 ensure that the vacuum is maintained inside the bell-jar when this is lowered on to conveyor belt 4.

The two cardboard belts containing the mix are then sent, by means of conveyor belt 4 and pusher element means 33, 34 and 35, to drying oven 28, after cutting cardboard sheets 16 and 18 at the outlet of press 1 by means of cutting device 29, e.g. with a cutting wire.

Oven 28, shown diagrammatically in detail by way of example in FIG. 4, consists of a series of heating plates 30, which heat the slabs below while supporting the slabs above.

The complex formed by said panels is moved vertically by hydraulic piston 31 so as to allow entry of a further slab for heating, while the slab whose polymerisation is finished is ejected on to a conveyor belt 32, which carries it to the ensuing processes.

The purpose of heating the slabs in the oven is to speed up polymerisation of the resin contained in the mix, which in this way can be carried out in a time compatible with production requirements.

Obviously the slabs are still at this stage contained between the two sheets of cardboard, which are removed in the ensuing processes.

It is also specified that the belt moves forward at regular time intervals, during which the various operations of distribution of the mix, pressing, cutting the cardboard belts and insertion into the drying oven are carried out.

Obviously the detailed constructional peculiarities of the apparatus described may assume different forms and appearances, within the essential characteristics of the invention, without thereby departing from the scope of the patent.

What I claim is:

1. An apparatus for the production of resin bonded grit slabs, which comprises means for mixing grit and resin in a predetermined ratio of grit to resin to form a mix, dispensing means for dispensing the mix, conveying means for the mix, means for stretching a first cardboard sheet on said conveying means, said dispensing means depositing said mix onto said first cardboard sheet, means for superimposing a second cardboard sheet on the mix deposited on said first cardboard sheet, whereby the mix is shaped into a slab, a press for compressing the slab, said conveying means conveying said slab into said press, means for maintaining a vacuum and

for vibrating said slab in said press, cutting means for cutting the first and second cardboard sheets, oven means for heating the slab, said conveying means conveying said slab successively from said press to said means for cutting the first and second cardboard sheets, then to said oven means.

2. The apparatus according to claim 1 wherein said press has a bottom plate and a bed plate, said conveying means conveys the mix in the interspace between said bottom plate and said bed plate.

3. The apparatus according to claim 2 wherein said conveying means is a belt and the return section of said belt passes through said interspace.

4. The apparatus according to claim 1 wherein said means for maintaining a vacuum in said press is a bell-jar.

5. The apparatus according to claim 1 wherein said oven means comprises a plurality of heating plates.

6. The apparatus according to claim 1 wherein said conveying means is a conveyor belt which moves at regular time intervals.

* * * * *

Appendix B

MSDS Number: **H4070** * * * * * *Effective Date:* ***02/15/08*** * * * * * *Supercedes:* ***04/22/05***

MSDS Material Safety Data Sheet

From: Mallinckrodt Baker, Inc.
222 Red School Lane
Phillipsburg, NJ 08885

J.T.Baker ®

24 Hour Emergency Telephone: 908-859-2151
CHEMTREC: 1-800-424-9300
National Response in Canada
CANUTEC: 613-996-6666
Outside U.S. And Canada
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

HYDROGEN PEROXIDE SOLUTION 3%

1. Product Identification

Synonyms: Hydrogen Dioxide Solution, 3%; Hydrogen Peroxide Topical Solution U.S.P
CAS No.: 7722-84-1
Molecular Weight: 34.01
Chemical Formula: H2O2 in aqueous solution (3%)
Product Codes: 2180, 2182

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Hydrogen Peroxide	7722-84-1	2 - 4%	Yes
Phenacetin	62-44-2	< 0.05%	No
Water	7732-18-5	96 - 98%	No

3. Hazards Identification

Emergency Overview

WARNING! MAY BE HARMFUL IF SWALLOWED. CAUSES EYE IRRITATION.

SAF-T-DATA(tm) Ratings (Provided here for your convenience)

Health Rating: 2 - Moderate
Flammability Rating: 0 - None
Reactivity Rating: 1 - Slight
Contact Rating: 2 - Moderate
Lab Protective Equip: GOGGLES; LAB COAT; VENT HOOD; PROPER GLOVES
Storage Color Code: Green (General Storage)

Potential Health Effects

Inhalation:
Not expected to be a health hazard under normal conditions.

Ingestion:
Large oral doses may cause irritation and blistering to the mouth, throat, and abdomen. May also cause abdominal pain, vomiting, and diarrhea.
Skin Contact:
No adverse effects expected on intact skin. Contact on burn or open skin may cause stinging pain or irritation.
Eye Contact:
Causes irritation, redness, and pain.
Chronic Exposure:
No information found.
Aggravation of Pre-existing Conditions:
No information found.

4. First Aid Measures

Inhalation:
Not expected to require first aid measures.
Ingestion:
Give several glasses of water to drink to dilute. If large amounts were swallowed, get medical advice.
Skin Contact:
Not expected to require first aid measures. Wash exposed area with soap and water. Get medical advice if irritation develops.
Eye Contact:
Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

5. Fire Fighting Measures

Fire:
Not considered to be a fire hazard. Concentrated hydrogen peroxide (30%) is a strong oxidizer, but this dilute product does not present that hazard.
Explosion:
Not considered to be an explosion hazard. Drying of concentrated hydrogen peroxide on clothing or other combustible materials may cause fire or explosion.

Fire Extinguishing Media:
Use any means suitable for extinguishing surrounding fire.
Special Information:
In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Contain and recover liquid when possible. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Small amounts of residue may be flushed to sewer with plenty of water.

7. Handling and Storage

Store in a cool, well-ventilated dark area. Protect from freezing. Isolate from incompatible substances. Protect container from physical damage. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:
-OSHA Permissible Exposure Limit (PEL):
1 ppm (TWA).
-ACGIH Threshold Limit Value (TLV):
1 ppm (TWA), A3: Animal carcinogen.
Ventilation System:
A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.
Personal Respirators (NIOSH Approved):
Not expected to require personal respirator usage. If the exposure limit is exceeded, wear a supplied air, full-facepiece respirator, airlined hood, or full-facepiece self-contained breathing apparatus. This substance has unknown warning properties.
Skin Protection:
Wear protective gloves and clean body-covering clothing.
Eye Protection:
Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

Appearance:
Clear, colorless solution.
Odor:
Odorless.
Solubility:
Infinitely soluble.
Specific Gravity:
ca. 1.0
pH:
No information found.
% Volatiles by volume @ 21C (70F):
100
Boiling Point:
ca. 100C (ca. 212F)
Melting Point:
ca. 0C (ca. 32F)
Vapor Density (Air=1):
No information found.
Vapor Pressure (mm Hg):
No information found.
Evaporation Rate (BuAc=1):
No information found.

---

10. Stability and Reactivity

Stability:
Stable under ordinary conditions of use and storage.
Hazardous Decomposition Products:
Decomposes to water and oxygen.
Hazardous Polymerization:
Will not occur.
Incompatibilities:
Heat, reducing agents, organic materials, dirt, alkalis, rust, and many metals.
Conditions to Avoid:
Light, heat, incompatibles.

---

11. Toxicological Information

\Cancer Lists\			
	---NTP Carcinogen---		
Ingredient	Known	Anticipated	IARC Category
Hydrogen Peroxide (7722-84-1)	No	No	3
Phenacetin (62-44-2)	No	Yes	2A
Water (7732-18-5)	No	No	None

---

12. Ecological Information

Environmental Fate:
No information found.
Environmental Toxicity:
No information found.

13. Disposal Considerations

Dilute with water and flush to sewer if local ordinances allow, otherwise, whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Not regulated.

15. Regulatory Information

--------\Chemical Inventory Status - Part 1\---------------------------------

Ingredient	TSCA	EC	Japan	Australia
Hydrogen Peroxide (7722-84-1)	Yes	Yes	Yes	Yes
Phenacetin (62-44-2)	Yes	Yes	Yes	Yes
Water (7732-18-5)	Yes	Yes	Yes	Yes

--------\Chemical Inventory Status - Part 2\---------------------------------

Ingredient	Korea	--Canada-- DSL	NDSL	Phil.
Hydrogen Peroxide (7722-84-1)	Yes	Yes	No	Yes
Phenacetin (62-44-2)	Yes	Yes	No	Yes
Water (7732-18-5)	Yes	Yes	No	Yes

--------\Federal, State & International Regulations - Part 1\----------------

Ingredient	-SARA 302- RQ	TPQ	------SARA 313------ List	Chemical Catg.
Hydrogen Peroxide (7722-84-1)	No	No	No	No
Phenacetin (62-44-2)	No	No	No	No
Water (7732-18-5)	No	No	No	No

--------\Federal, State & International Regulations - Part 2\----------------

Ingredient	CERCLA	-RCRA- 261.33	-TSCA- 8(d)
Hydrogen Peroxide (7722-84-1)	No	No	No
Phenacetin (62-44-2)	100	U187	No
Water (7732-18-5)	No	No	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
SARA 311/312: Acute: Yes Chronic: No Fire: No Pressure: No
Reactivity: Yes (Mixture / Liquid)

WARNING:
THIS PRODUCT CONTAINS A CHEMICAL(S) KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER.

Australian Hazchem Code: None allocated.
Poison Schedule: S5
WHMIS:
This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

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16. Other Information

NFPA Ratings: Health: **1** Flammability: **0** Reactivity: **1**
Label Hazard Warning:
WARNING! MAY BE HARMFUL IF SWALLOWED. CAUSES EYE IRRITATION.
Label Precautions:
Avoid contact with eyes.
Keep container closed.
Wash thoroughly after handling.
Label First Aid:
In case of eye contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention. If swallowed, give large amounts of water to drink. Never give anything by mouth to an unconscious person. If large amounts were swallowed, get medical advice.
Product Use:
Laboratory Reagent.
Revision Information:
No Changes.
Disclaimer:
****

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****

Prepared by: Environmental Health & Safety
Phone Number: (314) 654-1600 (U.S.A.)

Appendix C

6 results for: ***reagent*** Browse Nearby Entries

Dictionary.com Unabridged (v 1.1) – *Cite This Source* – *Share This*

re·a·gent Audio Help [ree-**ey**-*juh* nt] Pronunciation Key - Show IPA Pronunciation

-noun Chemistry.

a substance that, because of the reactions it causes, is used in analysis and synthesis.

[Origin: 1790–1800; RE(ACT) + AGENT; cf. ACT]

Dictionary.com Unabridged (v 1.1)
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reagent

To learn more about reagent visit Britannica.com

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American Heritage Dictionary – *Cite This Source* – *Share This*

re·a·gent Audio Help (rē-ā'jənt) Pronunciation Key

n. A substance used in a chemical reaction to detect, measure, examine, or produce other substances.

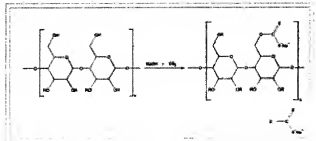
(Download Now or Buy the Book)
The American Heritage® Dictionary of the English Language, Fourth Edition

Appendix D

Cellophane

From Wikipedia, the free encyclopedia

Cellophane is a thin, transparent sheet made of regenerated cellulose.



Cellulose is treated with alkali and carbon disulfide to yield viscose.

Cellulose fibers from celery, wood, cotton or hemp are dissolved in alkali and carbon disulfide to make a solution called viscose, which is then extruded through a slit into an acid bath to reconvert the viscose into cellulose. A similar process, using a hole (a spinneret) instead of a slit, is used to make a fibre called rayon.

Cellophane was invented in 1908 by Jacques E. Brandenberger, a Swiss textiles engineer. After witnessing a wine spill on a restaurant tablecloth, Brandenberger initially had the idea to develop a clear coating for cloth to make it waterproof. He experimented, and came up with a way to apply liquid viscose to cloth, but found the resultant combination of cloth and viscose film too stiff to be of use. However, the clear film easily separated from the backing cloth, and he abandoned his original idea as the possibilities of the new material became apparent. Cellophane's low permeability to air, grease and bacteria makes it useful for food packaging.

Whitman's candy company initiated use of cellophane for candy wrapping in the United States in 1912 for their Whitman's Sampler. They remained the largest user of imported cellophane from France until nearly 1924, when DuPont built the first cellophane manufacturing plant in the US. In 1935 British Cellophane Ltd was established, a joint venture between La Cellophane SA and Courtaulds, which opened a major factory producing cellophane in Columbus, OH in 1937. Cellophane is also used in gift baskets and flower bouquets.

Cellulose film has been manufactured continuously since the mid-1930s and is still used today. As well as packaging a variety of food items, there are also industrial applications, such as a base for self-adhesive tapes like Sellotape and Scotch Tape, a semi-permeable membrane in a certain type of battery, as dialysis tubing (Visking tubing) and as a release agent in the manufacture of fibreglass and rubber products. The word "cellophane" has been genericized, and is often used informally to refer to a wide variety of plastic film products, even those not made of cellulose.[1]

Cellophane sales have dwindled since the 1960s, through use of alternative packaging options, and the fact that viscose is becoming less common because of the polluting effects of carbon disulfide and other by-products of the process. However, the fact that cellophane is 100% biodegradable has meant it is returning in popularity as a food wrapping.[2][3] It is also used in the making of bendy rulers, although it is not common.

See also

- Genericized trademark
- British Cellophane
- Jacques E. Brandenberger

References

1. ^ Modern petro based Cello Bags (http://www.cellobags-clear.com/)
2. ^ at Pak-Sel Inc (http://www.pak-sel.com/sub1.htm) Accessed March 2007.
3. ^ Biodegradable cellophane (http://greenearthofficesupply.stores.yahoo.net/biodcelbagfo.html) at Green Earth Office Supply. Accessed March 2007.

External links

- Cellophane Invention (http://inventors.about.com/library/inventors/blcellophane.htm)

Retrieved from "http://en.wikipedia.org/wiki/Cellophane"
Categories: Packaging materials | Cellulose | Genericized trademarks
Hidden category: Articles needing additional references from July 2007